

American River, California  
Reservoir Operation for Risk and Uncertainty Analysis

**HYDROLOGY AND RESERVOIR OPERATION  
OFFICE REPORT**

Table of Contents

1.	Purpose and Scope .....	1
2.	References .....	2
3.	Unregulated Flow Frequency .....	3
4.	Reservoir Operations Model .....	4
5.	Reservoir Routing Criteria Unregulated Flow Frequency .....	5
a.	Operational Assumptions.....	5
b.	Operational Uncertainties .....	7
6.	Alternatives .....	10
a.	Folsom Dam Enlargement Plans.....	10
b.	Stepped Release Plans .....	11
c.	Advance Release .....	11
7.	Flood-Risk Analyses .....	12
a.	Inflow-Outflow Curve .....	13
b.	Rating Curve .....	13
c.	Levee Stability .....	13
d.	Estimating Flood Risk .....	13
A.	Attachment A – Monte Software Methodology .....	34
B.	Attachment B – Monte Output .....	38
C.	Attachment C – PMF Routings Flood Release Analyses.....	41

## List of Tables

1. Peak annual inflow frequency curve for Folsom Dam.....	4
2. Current Operation Criteria Used for Routings.....	9
3. Alternatives .....	10
4. Advance Release Sensitivity Routings.....	11
5. Traditional estimates of frequency curves and annual exceedance probability, Folsom Dam modification to outlets, Howe Avenue index location .....	14
6. Annual exceedance probability, Folsom Modification, Howe Avenue Index Location.....	15
7. Event conditional non-exceedance probability, Howe Avenue Index Location .....	15
C-1. Summary of PMF Studies .....	44
C-2. Summary of PMF Sensitivity Routings .....	45

## List of Figures

1.	Folsom Dam Unregulated Frequency Curves .....	16
2.	Folsom Dam 3-Day Unregulated Frequency Curve .....	17
3.	Inflow Hydrograph for 200-yr Event .....	18
4.	Folsom Dam – Emergency Spillway Release Diagram.....	19
5.	Folsom Dam - Water Control Diagram.....	20
6.	Folsom Dam – Outlet Rating Curves 8.33' x 16.25' .....	21
7.	Pertinent Information .....	22
8.	Raise Plans - Regulated Frequency Curves.....	23
9.	Raise Plans – Hypothetical 200-yr Event.....	24
10.	Step Plans - Regulated Frequency Curves .....	25
11.	Step Plans - Hypothetical 200-yr Event .....	26
12.	Raise Plans with Pre-Release - Regulated Frequency Curves .....	27
13.	Raise Plans with Pre-Release – Hypothetical 200-yr Event.....	29
14.	Step Plans with Pre-Release – Regulated Frequency Curves .....	29
15.	Step Plans with Pre-Release – Hypothetical 200-yr Event .....	30
16.	Inflow versus outflow relationship for outlet modifications and surcharge storage.....	31
17.	Rating Curve below Folsom Dam, Howe Avenue Index Location.....	32
18.	Traditional means for estimating annual exceedance probability.....	33